SHORT REPORT

Professional consensus on orthodontic risks: what orthodontists should tell their patients. A cross-sectional study at Saidu college of dentistry, Swat

Erum Behroz Khan[1], Huda Ghaffar[2], Neelam Shah Jehan[3], Muhammad Zaheen[4], Tufail Muhammad[5], Ali Raza Jafri[6]

Abstract

The importance of transparent communication regarding orthodontic risks during the informed consent process in paramount in terms of ensuring a strong orthodontist-patient relationship. Conducted on a national scale in Pakistan, the current study was planned to establish a consensus among orthodontic professionals regarding critical risks involved in such a discussion. The cross-sectional survey involving 132 orthodontists across Pakistan led to the emergence of 10 key risks, including relapse, treatment duration and gingivitis. However, the study's sole focus on orthodontists' perspectives limited its insights, overlooking invaluable input from patients' experiences. Nevertheless, the consensus underscored the significance of addressing these risks to ensure informed consent and patient autonomy. Going forward, it is imperative to customise this evidence-based information according to individual patient needs, and maintain an ongoing dialogue regarding potential risks, fostering a collaborative approach to orthodontic care and decision-making.

Keywords: Orthodontic risks communication, Patient education and safety, Medico-legal complications, Informed consent.

DOI: https://doi.org/10.47391/JPMA.11372

Introduction

Conveying risks in orthodontics presents a unique set of challenges. In contrast to urgent medical interventions, orthodontic procedures are typically elective, signifying a deliberate choice made by the patients. Moreover, these treatments unfold over an extended duration, often spanning several years and necessitate a collaborative partnership between the orthodontic practitioner, the patient and the primary caregiver. These dynamicsunderscores the importance of comprehensive and effective risk communication throughout the treatment journey.[1,2]

Risk refers to the likelihood of harm arising from a hazard. It is important to have adequate risk communication, which involves open and two-way information-sharing and discussions about the potential harm and benefits.[3] In the realm of orthodontic interventions, risks are delineated as encompassing a spectrum of unfavourable effects or plausible untoward consequences that have the potential to manifest because of the therapeutic course of action. This comprehensive perspective includes the ambit of inadvertent or undesired repercussions, as well as iatrogenic ramifications, denoting those outcomes that are induced by the very treatment protocol itself.[4]

This triad of individuals involved in orthodontic care makes risk communication particularly complex. It requires effective communication and shared decision-making to ensure that everyone involved understands the potential risks and benefits. It is essential to strike a balance between conveying the possible side effects of the treatment and the anticipated benefits, keeping in view the considerable investment of time and resources involved.[5,6]

In orthodontics, a noticeable absence of comprehensive guidelines for discussing treatment risks with patients is evident.[7-9] The current study was planned to address this gap by gathering experts' opinion to establish consensus on fundamental risks with the aim of establishing a standardised protocol for risk communication.

Methods and Results

The cross-sectional study was conducted from June to September 2023 after approval from the ethics review committee of the Saidu Medical College, Swat, Pakistan. Since no relevant studies had been conducted in Pakistan, it was assumed that at least 50% of dentists were of the opinion that all the potential risks were critical in terms of educating the patients at the time of obtaining informed consent. The sample size was estimated using the OpenEpi calculator with 95% confidence interval and 5% precision.[10] Non-probability sampling technique was used and included were orthodontists who had

[1-5]Department of Orthodontics, Saidu College of Dentistry, Swat, Pakistan; [6]Department of Orthodontics, Akhtar Saeed Medical and Dental College, Lahore, Pakistan.

Correspondence: Erum Behroz Khan. **Email:** erumbehroz@gmail.com

ORCID ID: 0000-0002-6192-5440

Submission complete: 09-12-2023 **First Revision received:** 19-04-2024

Acceptance: 02-11-2024 **Last Revision received:** 01-11-2024

graduated and were actively employed at public-sector tertiary care hospitals and possessed a minimum of 3 years of clinical experience. Those who did not meet the criterion were excluded. Data was collected using a survey form, which included consent regarding participation in the study.

The participants were asked to evaluate the significance of including different risks in discussions with patients as an integral component of obtaining informed consent for orthodontic treatment. Each risk was rated on a scale from 1 to 9, with 1 = "not important at all" and 9 = "absolutely critical".[11] To ensure clarity and avoid any confusion, additional information was provided to explicitly describe the risks.

Data was analysed using SPSS 24. For categorical variables, frequencies and percentages were calculated. For numerical variables, Shapiro-Wilk test was employed to assess normality assumptions, revealing a non-normal distribution.

Table-1: Responses outlining general risk parameters (n=132).

Risk parameters	Risk score		
	1-3	4-6	7-9
Relapse	4(3.5)	11(9.6)	100(87)
Length of treatment	9(7.8)	8(7)	98(85.2)
Failure to achieve desired tooth movement(s)	20(17.4)	37(32.2)	58(50.4)
Pain	10(8.7)	26(22.6)	79(68.7)
Appliances breaking	3(2.6)	23(20)	89(77.4)
Patients missing school lessons/time off work	23(20)	38(33)	54(47)
Risks associated with tooth extraction(s)	27(23.5)	29(25.2)	59(51.3)
Bacterial endocarditis	46(40)	39(33.9)	30(26.1)
The negative effect of the appliance on sleeping patterns	33(28.7)	38(33)	44(38.3)
Radiation exposure	43(37.4)	37(32.2)	35(30.4)
Teasing, embarrassment	30(26.1)	38(33)	47(40.9)

Table-2: Responses outlining intra-oral risk parameters.

Intraoral risks	Risk score		
	1-3	4-6	7-9
Demineralization or caries	1(0.9)	23(20)	91(79.1)
Root resorption	13(11.3)	29(25.2)	73(63.5)
Gingivitis	2(1.7)	15(13)	98(85.2)
Lacerations and ulcers	14(12.2)	32(27.8)	69(60)
Gingival recession	20(17.4)	29(25.2)	66(57.4)
Development or worsening of black triangles between teeth	29(25.2)	37(32.2)	49(42.6)
Tooth wear caused by opposing bracket	32(27.8)	52(45.2)	31(27)
Problems during eating	8(7)	28(24.3)	79(68.7)
Devitalization of tooth	33(28.7)	49(42.6)	33(28.7)
Periodontitis	5(4.3)	27(23.5)	83(72.2)
Damage to teeth or restoration on debonding	23(20)	39(33.9)	53(46.1)
Airway or ingestion risk	29(25.2)	36(31.3)	50(43.5)

Table-3: Response outlining extra-oral risk parameters.

Extraoral risks	Risk score		
	1-3	4-6	7-9
Unfavourable growth	21(18.3)	39(33.9)	55(47.8)
Problems in speaking	23(20)	45(39.1)	47(40.9)
Flattening of the facial profile	32(27.8)	31(27)	52(45.2)
Temporomandibular dysfunction	27(23.5)	37(32.2)	51(44.3)
Soft tissue injury during placement	33(28.7)	39(33.9)	43(37.4)
Allergies to orthodontic materials	27(23.5)	39(33.9)	49(42.6)

Table-4: Top-10 risk parameters.

Top ten risks	Frequency (%)
Relapse	100(87.0)
Length of treatment	98(85.2)
Gingivitis	98(85.2)
Demineralization or caries	91(79.1)
Appliances breaking	89(77.4)
periodontitis	83(72.2)
Pain	79(68.7)
Problems during eating	79(68.7)
Root resorption	73(63.5)
Lacerations and ulcers	69(60.0)

The risks were stratified into three distinct categories encompassing general risk parameters (Table 1), intra-oral risks (Table 2) and extra-oral risks (Table 3). The respective median risk scores with interquartile range (IQR) for each category was noted. Besides, top-10 risk parameters were also listed (Table 4).

Discussion

A patient undergoing orthodontic treatment is at a significant probability of experiencing most[12,13] of the risks that were recommended by the professionals participating in the current study. This elevated likelihood is evident in qualitative research accounts detailing the experiences of orthodontic patients, such as discomfort, dental caries, gingivitis, appliance breakage, ulceration and the potential for relapse.[14-16]

However, the current findings suggest that orthodontists may not consistently inform their patients about certain risks, particularly those related to eating and speaking, which are of significant concern to the patients. These findings align with earlier research[17] showing that patients and professionals often have differing perspectives on orthodontic issues, underscoring the need for additional communication about critical risks.

Upon scrutinising the top-10 risk parameters, it is evident

that orthodontic professionals accorded greater significance to the general risk parameters, deeming them more pivotal than both intra-oral and extra-oral risks (Table 4).

Orthodontists may sometimes inadvertently neglect certain risks that hold significant implications for a patient's daily life, such as challenges experienced while eating or speaking. These aspects deserve careful consideration and open communication during the treatment process.

The current findings support the importance of treatment providers having both the knowledge and the communication skills needed to effectively explain orthodontic risks to patients. Companies that offer direct-to-consumer orthodontic services, as well as inadequately trained providers, may lack the education and emphasis on risk communication required for proper informed consent.[18] This underscores the crucial role of dental regulators in safeguarding patients and ensuring their right to make informed decisions about their care.[19] This also highlights the need for ongoing professional development and training, equipping the orthodontists with the skills necessary for transparent patient dialogue. Regulatory committees must also maintain vigilance in enforcing standards that prioritise accurate and comprehensible information, empowering the patients to make informed decisions regarding their orthodontic care.

The current study has limitations as it excluded the patient perspective regarding risk disclosure. There is a need for research involving both patients and orthodontists, conducted by the ethical and legal departments of tertiary care hospitals in Pakistan, to identify opportunities for enhancing the informed consent process for orthodontic treatment. Establishing a standardised and well-documented informed consent protocol nationwide is crucial to ensuring thorough risk disclosure and addressing legal complexities effectively.

Conclusion

A professional consensus was generated regarding 10 key risks essential for discussion during orthodontic treatment consent process, emphasising the need to customise information to individual patient needs and integrate it into ongoing risk communication. This approach empowers patients while upholding the highest standards of orthodontic care. By prioritising thorough risk disclosure, orthodontists demonstrate a commitment to patient autonomy and professional integrity. This comprehensive approach enhances the quality of orthodontic care and contributes to improved patient outcomes and satisfaction.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

References

1. Shelswell J, Patel VA, Barber S. The effectiveness of interventions to increase patient involvement in decision-making in orthodontics: A systematic review. J Orthod. 2022; 49:129-42.doi: 10.1177/14653125211048202.
2. Perry J, Popat H, Johnson I, Farnell D, Morgan MZ. Professional consensus on orthodontic risks. Am J Orthod Dentofacial Orthop. 2021; 159:41-52.doi: 10.1016/j.ajodo.2019.11.017.
3. Desman AR, Fields HW, Ni A, Robinson FG, Skulski B, Firestone AR, et al. Rehearsal's effect on long-term recall and comprehension of orthodontic informed consent. Am J Orthod Dentofacial Orthop. 2022; 161:e114-26. doi: 10.1016/j.ajodo.2021.06.013.
4. Meeran NA. Iatrogenic possibilities of orthodontic treatment and modalities of prevention. J Orthod Sci. 2013; 2:73-86. doi: 10.4103/2278-0203.119678.
5. Renn O. Risk communication–Consumers between information and irritation. J Risk Res. 2006; 9:833-49. DOI:10.1080/13669870601010938
6. Meade MJ, Weston A, Dreyer CW. Valid consent and orthodontic treatment. Aust Orthod J. 2019; 35:35-45. DOI: https://doi.org/10.21307/aoj-2020-031
7. Wishney M. Potential risks of orthodontic therapy: a critical review and conceptual framework. Aust Dent J. 2017; 62: 86-96. doi: 10.1111/adj.12486.
8. Zhao Y, Shi X, Liu J, Huo R, Xia K, Wang Y, et al. Patients' perceptions matter: Risk communication and psychosocial factors in orthodontics. Am J Orthod Dentofacial Orthop. 2024; 166:393-403.e18. doi: 10.1016/j.ajodo.2024.06.011.
9. Perry J, Johnson I, Popat H, Morgan MZ, Gill P. Adolescent perceptions of orthodontic treatment risks and risk information: a qualitative study. J Dent. 2018; 74:61-70.
10. Dean AG, Sullivan KM, Soe MM. OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version. [Online] [Cited 2024 October 19]. Available from: URL: www.OpenEpi.com.
11. Fitch K, Bernstein SJ, Aguilar MD, Burnand B, LaCalle JR, Lázaro P, et al. The RAND/UCLA Appropriateness Method User's Manual. Santa Monica, CA: RAND Corporation, 2001.
12. Travess H, Roberts-Harry D, Sandy J. Orthodontics. Part 6: Risks in orthodontic treatment. Br Dent J. 2004; 196:71-7. doi: 10.1038/sj.bdj.4810891.
13. Orthodontic treatment-related risks and complications: part I dental complications. South Eur J Orthod Dentofac Res. 2017; 4:43-7. doi:10.5937/sejodr4-15530
14. Marshman Z, Eddaiki A, Bekker HL, Benson PE. Development and evaluation of a patient decision aid for young people and parents considering fixed orthodontic appliances. J Orthod. 2016; 43:276-87. doi: 10.1080/14653125.2016.1241943.
15. Mandall NA, Vine S, Hulland R, Worthington HV. The impact of fixed orthodontic appliances on daily life. Community Dent Health 2006; 23:69-74.
16. Feldmann I, List T, John MT, Bondemark L. Reliability of a questionnaire assessing experiences of adolescents in orthodontic

treatment. Angle Orthod 2007; 77:311-7. doi: 10.2319/0003-3219(2007)077[0311:ROAQAE]2.0.CO;2.
17. Ackerman JL, Proffit WR. Communication in orthodontic treatment planning: bioethical and informed consent issues. Angle Orthodontist. 1995; 65:253-62. doi: 10.1043/0003-3219(1995)065<0253:CIOTPB>2.0.CO;2.
18. American Association of Orthodontists. Questions to consider when researching direct-to-consumer orthodontic companies. American Association of Orthodontists. [Online] [Cited October 2020 5]. Available from: URL: https://www.aaoinfo. org/_/online-orthodontic-companies/.
19. Meade MJ, Weston A, Dreyer CW. Valid consent and orthodontic treatment. Aust Orthod J. 2019; 35:35-45.

AUTHORS' CONTRIBUTIONS:
EBK: Concept and methodology.
HG: Data collection, analysis and interpretation.
NSJ: Study design and implementation of research.
MZ: Writing and analysis of results.
TM: Planning and supervision.
ARJ: Critical review and guidance on the study proposal.